CLAIMS

SUBA1

1. Process for regulating the exposure time of a light sensor, characterized in that it comprises the following steps:

-a) setting the exposure time of the sensor to a value selected in a first range of values defined between a minimum value and a maximum value and comprising M prefixed values;

-b) acquiring the image of an object onto the sensor, such image comprising a plurality of pixels;

-c) analyzing the acquired image for detecting the level of luminosity of the same;

-d) comparing the detected level of luminosity with a prefixed higher (lower) global threshold level representative of a condition of overexposure (under-exposure) of the image;

-e) varying the exposure time of the sensor and iteratively repeating the previous steps until an optimum exposure time equal to the higher (lower) exposure time is found, among the ones set, for which the image presents a level of luminosity smaller (greater) than the prefixed higher (lower) global threshold level.

2. Process according to claim 1, wherein step d) of comparison between the detected level of luminosity and the higher (lower) global threshold level comprises the following steps:

-d1) verifying if the level of luminosity of the acquired image is greater (smaller) than the prefixed higher (lower) global threshold level, and:

-d11) if such verification has a positive result, decreasing (increasing) the exposure time of the sensor and iteratively repeating the previous steps starting from b) until an optimum exposure time is found when, alternatively:

-d11a) the value of the exposure time set is the minimum (maximum) of the range of prefixed values;

-d11b) the value of the set exposure time is such that the image presents a level of luminosity smaller (greater) than the prefixed higher (lower) global threshold level.

3. Process according to claim 2, wherein, if the verification of step d1) has a negative result, the following steps are carried out:

-d12) increasing (decreasing) the exposure time of the sensor and iteratively repeating the previous steps starting from b) until an optimum exposure time is found when, alternatively:

-d12a) the value of the exposure time set is the maximum (minimum) of the range of prefixed values;

-d12b) the value of the exposure time set is such that the image presents a level of luminosity smaller (greater) than the prefixed higher (lower) global threshold level.

4. Process according to claim 1, wherein step c) of analyzing the image for detecting its level of luminosity comprises the following steps:

-c1) generating a signal representative of the level of luminosity of each pixel of the image acquired by the sensor;

-c2) verifying subsequently if the signal generated in correspondence to a current pixel is greater (smaller) than a prefixed higher (lower) global threshold level representative of a condition of overexposure (under-exposure) of the analyzed pixel, and:

-c21) if such verification has a positive result, accumulating the contribution of the current pixel and iteratively repeating the previous steps starting from c2) for the following pixels;

-c22) if such verification has a negative result, releasing the current pixel and iteratively repeating the previous steps starting from c2) for the following pixels;

-c3) verifying if the sum of the contributions accumulated is greater (smaller) than the prefixed higher (lower) global threshold level of the image, in such case

carrying out step e), otherwise repeating the previous steps starting from c2).

5. The method ~~Process~~ according to claim 1, wherein step c) of analyzing the image acquired by the sensor comprises, in turn, the following steps:

-ci) analyzing, in a period of time "n", the image acquired by the sensor exposed with an exposure time T_{n-1} set in the time "n-1";

-cii) setting, in the time "n", a new exposure time T_n in order to acquire on the sensor an image which is destined to be analyzed in the time "n+1" and proceeding with steps d) and e);

-ciii) iteratively repeating the previous steps starting from c1).

6. The method ~~Process~~ according to claim 5, wherein the value of the new exposure time T_n set in step cii) is greater ~~(smaller)~~ than the value T_{n-1} previously set.

7. The method ~~Process~~ according to claim 1, wherein once the optimum exposure time has been found, the following steps are carried out:

-f) defining a second range of values of exposure time comprising Q prefixed values between a new minimum and a new maximum value found among the M values of the first range of values and close to the value of the optimum exposure time previously found;

-g) repeating the previous steps starting from a) until a new optimum exposure time is found;

-h) iteratively repeating the previous steps starting from f), each time defining ranges shorter and shorter which are close to the optimum exposure time previously found.

8. The method ~~Process~~ according to claim 1, wherein the analysis of the image acquired by the sensor is carried out on a limited portion of the image itself.

ADDA2